

Idling Pushes Profits out the Tailpipe

Idling a heavy-duty truck for comfort and convenience during rest stops and depot downtime is an expensive way to keep drivers safe and comfortable. Increasingly affordable alternatives to idling not only reduce pollution and noise, but also save money. Typically, a long-haul truck idles about 1,830 hours per year, using almost 1,500 gallons of fuel. In practice, some trucks idle just a couple of nights per week while others are rarely in “engine off” mode.

Trucks idle to:

- Heat and cool the cab and sleeper
- Keep the engine and cab warm while waiting in lines and making pick-ups and deliveries
- Mask noises while the truck operator sleeps
- Keep the fuel warm in the winter
- Avoid cold starting
- Provide for personal safety

Researchers estimate that heavy- and light-duty vehicle idling wastes about 6 billion gallons of fuel annually. Locomotives, buses, freighters, and cruise ships also idle for extended



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periods. That idling time wastes money, accelerates engine wear and tear, and reduces mileage to overhaul. Many alternatives to idling exist today that use up to 90% less fuel, which can save money, reduce air pollution, and help operators get a better night's sleep.

Alternatives to Idling Have Become Affordable

Idling a heavy-duty truck consumes an average of 0.8 gallon of fuel per hour. When fuel costs \$4.00 a gallon, idling during a 10-hour rest stop (rest-period duration is set by federal law) costs \$32. Depending on how much a truck idles and current diesel fuel prices, alternatives to idling can pay for themselves in less than 6 months to 2 years.

TECHNOLOGY	DESCRIPTION
Auxiliary Power Unit/Generator Set	Auxiliary power units (APUs) are vehicle-mounted systems that can provide power for climate control and electrical devices in trucks, locomotives, and marine vehicles without the need to run the vehicle's main engine. These systems generally consist of a small internal combustion engine equipped with a generator and heat-recovery system to provide electricity and heat. Some systems use a bunk heater to provide warmth in the sleeping area. For air conditioning, an electrically powered unit is normally included as part of the APU, although some APUs power the truck's own air-conditioning system.
Cab/Bunk Heater	Cab/bunk heaters are diesel-fired heaters that supply warm air to the cab/sleeper. A package may also include an engine block heater. Fuel use and emissions by diesel heaters are very low, because they supply heat directly from a small combustion flame to a heat exchanger. Cab heaters can be coupled with air conditioners if the trucker's service area includes both cold winters and hot summers.
Coolant Heater	Coolant heaters use the vehicle's regular heat-transfer system. The heater is mounted in the engine compartment and burns diesel fuel from the fuel tank to heat the vehicle's coolant. The heater then pumps the heated coolant through the engine, radiator, and heater box. By keeping the engine warm, coolant heaters reduce the impact of cold starts.
Energy Recovery System	Energy recovery systems use the vehicle's heat-transfer system much like a coolant heater but without a separate piece of equipment. A small electric pump is connected to the water line, which keeps the truck's cooling system and heater operating after the engine is turned off. The cooling system and heater then use engine heat that would otherwise dissipate. Energy recovery systems do not typically provide enough warmth to be a sole source of overnight heat.
Storage Cooling	Storage cooling appears in two forms: thermal storage and battery-electric air conditioners. Thermal storage uses energy from the truck's running engine to freeze a large block of ice, which the driver then uses to cool the sleeper cab when the truck is stopped. Battery-electric air conditioners use the running engine's energy to recharge a battery, which is used to power the air conditioning when the truck is stopped. This process increases the engine's operational fuel consumption by only a small amount, and the emissions from burning this fuel (which are controlled by the engine's emissions control system) occur on the highway, not at the truck stop or depot.

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Automatic Engine Start/Stop Control	These controls sense sleeper-cab temperature and automatically turn the engine on when the cab becomes too warm or cold. They can also keep locomotive engines warm. Even though the vehicle's engine still idles some of the time with this equipment, it runs less than it would with conventional equipment.
Electrified Parking Space	Electrified parking spaces (EPS), also known as "shore power," allow truckers to shut off their engines and "plug in" for HVAC and other amenities. Standalone systems (single-system electrification) provide HVAC directly to the truck. Dual-system electrification provides plug-in power for a truck driver's auxiliary HVAC systems, appliances, and accessories.

Idling May Be Illegal

Many state and local laws prohibit idling, and more are being added all the time. Violating these laws can result in steep fines. IdleBase (cleancities.energy.gov/IdleBase) describes idling laws for all classes of on-road vehicles. For laws specific to heavy-duty vehicles, the American Transportation Research Institute (atri-online.org) provides a downloadable cab card.

Idling Degrades Air Quality

According to the U.S. Environmental Protection Agency's SmartWay Technology Program, long-duration idling of truck and locomotive engines consumes more than 1 billion gallons of diesel fuel and emits 11 million tons of carbon dioxide, 200,000 tons of nitrogen oxides, and 5,000 tons of particulate matter—*each year*. Poor air quality and climate change affect everyone.

Resources

National Idling Reduction Network News (eere.energy.gov/vehiclesandfuels/resources/fcvt_national_idling.html) brings together trucking and transit companies; railroads; ports; equipment manufacturers; federal, state, and local government agencies; nonprofit organizations; and national research laboratories to identify consistent, workable solutions to vehicle idling. This newsletter also provides listings of current funding opportunities for idling reduction equipment.

The U.S. Environmental Protection Agency's SmartWay Transport Partnership (epa.gov/smartwaylogistics) certifies vehicles and aftermarket technologies that can help heavy-duty vehicle owners and drivers reduce idling time. The program also offers financing.

The Department of Energy's Alternative Fuels Data Center offers a series of tools for calculating idling-related costs, which are available at afdc.energy.gov/conserve/idle_reduction_heavy.html.



Photo by Linda Gaines, Argonne National Laboratory

Several Clean Cities coalitions, local partnerships with support from the Department of Energy, have collaborated on heavy-duty idling reduction projects. In 2011, coalitions reduced 32 million gallons of gasoline equivalent through idle reduction strategies. Find the coalition nearest you at cleancities.energy.gov.

What Can You Do?

- If you are a driver, consider whether some of your idling time could be reduced without affecting your operations or comfort.
- If you are a fleet owner, consider investing in technologies to reduce the amount of time your vehicles must idle in order to function efficiently and keep your drivers comfortable.
- If you run a depot or delivery center, investigate approaches to scheduling that will reduce the time truck drivers must wait before making pick-ups or deliveries. If long waits are unavoidable, consider making a comfortable waiting room available for the drivers (or installing electrified parking spaces).



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